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ABSTRACT

Intended for the vocational instructor, the booklet presents a task list and competency record for the occupational program of lubrication specialist. The list was developed by a working committee of auto mechanics instructors and industry representatives throughout the state of Minnesota for use in program articulation between secondary and postsecondary institutions. From the task list for the occupational program of automotive mechanic, groups of tasks are organized into 12 areas of competence: Steering and Suspension System, Drive Train, Engine Mechanical, Cooling and Heating System, Air Conditioning, Brake, Electrical, Engine Tune-Up, Fuel and Emission System, Body Adjustments, Exhaust and Lubrication, and Related Subject Activities. The competency record is a suggested replacement for the traditional report card and would accompany the student through his or her vocational training in the secondary and/or postsecondary school. For each group of tasks within the competency areas, the student is graded for each competency in task performance on a 6-point scale ranging from "received introduction only" to "able to help others; very competent." Also included in the booklet are the job description for lubrication specialist, list of references, the industry representatives involved in developing the task list, members of the curriculum articulation project, and maps showing the locations of vocational centers and area vocational technical institutes in the state. (Author/RG)

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LUBRICATION SPECIALIST

task list and competency record

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I. JOB DESCRIPTION

Lubrication Specialist - (DOT 915.887)
(Other common job titles: lubrication person, lube person)

The lubrication specialist installs or replaces minor cooling, heating and electrical units, exhaust system components, performs lubrication service, changes the oil in the engine and replaces parts and accessories. He/she discusses problems or requests with the customer or reads the work order to determine probable repairs.

In doing service and replacing parts, the lubrication specialist visually inspects the vehicle and notifies the customer of defects and impending problems.

Graduates* of the lubrication specialist occupational program find employment in independent garages, auto service centers, dealerships and fleet maintenance shops.

It is not assumed that he/she could be employed as a foreman, service manager, automotive mechanic, service center mechanic or as any other automotive specialist.

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*Graduate: A student who has demonstrated competent performance of all tasks designated on the task list for this occupational program.

II. TASK LIST

The following task list gives you, the vocational instructor, recommendations about what your students should be able to do when they take a job as a LUBRICATION SPECIALIST. It was developed by a working committee of auto mechanics instructors and industry representatives throughout the state of Minnesota.

The task list on the following pages includes only the tasks in the AREAS OF COMPETENCE recommended for a graduate of the LUBRICATION SPECIALIST occupational program. These tasks were selected from the task list for the Automotive Mechanic. The occupational program for LUBRICATION SPECIALIST does not require that the student be competent in performing all tasks recommended for the Automotive Mechanic. The numbering system used for this task listing shows the tasks that were selected from the Automotive Mechanic task list.

As you utilize this task list, you will need to continue working with your local advisory committee and with other instructors in your geographic area. Judgments must be made, by you, concerning the amount of time to spend in teaching various tasks, the conditions surrounding performance of each task, and the performance level for each task that will be acceptable.

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II. TASK LIST

AREA OF COMPETENCE #1

PERFORM STEERING AND SUSPENSION SYSTEM SERVICE

IA. Inspect Steering and Suspension System
- 1. Inspect springs for breakage and sag
  - a. Coil
  - b. Leaf
  - c. Torsion Bar
- 2. Inspect shock absorber for leaks, operation, and mounting
  - a. Standard
  - b. Air
- 3. Inspect control arm bushings for distortion and wear
- 4. Check ball joints for wear and lubrication
- 5. Check spindles and steering knuckles for bent parts and worn parts
- 6. Inspect tires and wheels for wear pattern
  - a. Air pressure
  - b. Proper size
- 7. Inspect wheel bearings for noise and condition
- 8. Inspect tie rods for looseness, seals, and bent rods
- 9. Inspect idler arms for worn bushings
- 10. Inspect stabilizer bars for breakage and bushing wear
- 11. Inspect steering arms for damage
- 12. Inspect drag links for damage and loose ends
- 13. Inspect bell-crank assemblies for damage and wear
- 14. Inspect rear-axle housing for damage, broken welds, bushings, and leaks
- 15. Inspect frame and body for bends, cracks, damage, and height
- 16. Inspect sway bars for bushing wear
- 17. Inspect strug bars for bushing wear
- 18. Inspect solid-beam axles for damage and bushing wear
- 19. Inspect trailing and torque arm for distortion
- 20. Inspect trunnions for looseness
- 21. Check torsion bar height
- 22. Inspect front wheel drive/steering axle for worn parts

IIA. Remove and Replace Steering and Suspension Components
- 2. R/R shock absorbers
  - a. Standard shock components
  - b. Air shock components
- 6. Mount and demount tires. Use tire changing machine
  - a. Repair tires
- 7. R/R wheel bearings, pack and adjust
  - a. Replace seals
- 24. Perform lubrication service
- 25. Perform safety inspection

IB. Inspect Manual and Power Steering Systems
   1. Inspect fluid levels and leak
   3. Inspect pump for mounting, lines, seals, hoses, noise, pulley, and belts

IIB. Remove and Replace Manual and Power Steering System Components
   1. R/R belts, hoses, and lines

AREA OF COMPETENCE #2

PERFORM DRIVE TRAIN SERVICE

IA. Inspect Clutch Assembly
- 1. Inspect clutch operation
- 2. Inspect pedal free play
- 4. Inspect engine and transmission mounts

IIA. Remove and Replace Clutch Components
- 5. Adjust free play and total travel

IB. Inspect Manual Transmission Assembly
- 1. Inspect fluid levels and leaks

IC. Inspect Automatic Transmission Assembly
- 1. Inspect fluid levels, leaks, and conditions
- 4. Inspect lines and hoses

ID. Inspect Drive Shaft Components
- 1. Inspect drive shaft condition
- 2. Inspect universal joints for wear
- 3. Inspect center bearing for condition
- 4. Inspect constant velocity joint
- 5. Lubricate components

IE. Inspect Drive Axle Assemblies
- 1. Inspect fluid levels and leaks
  - a. Rear axle assembly
  - b. Front axle assembly
  - c. Four wheel drive
  - d. Transfer case
- 2. Inspect mounting and noises

AREA OF COMPETENCE #3

PERFORM ENGINE MECHANICAL SERVICE

IA. Inspect Engine Condition
   1. Inspect fluid levels and leaks
   2. Check performance and condition
      a. Check abnormal noises, smoke, and roughness
      b. Check for oil deposits in tailpipe, radiator, and air cleaner
      c. Use infra-red to check engine condition

AREA OF COMPETENCE #4

PERFORM COOLING AND HEATING SYSTEM SERVICE

IA. Inspect Cooling and Heating Systems

1. Inspect and test pressure cap
2. Pressure test cooling system
3. Inspect and test combustion leakage
   a. Use pressure test, fluid gas detector, and infra-red testers
4. Inspect, test, and add coolant
5. Inspect system for leaks
6. Inspect and replace hoses
7. Inspect, replace, and adjust fan belt with tension gauge
8. Inspect radiators, flush, and replace coolant
9. Inspect, test, and replace thermostat and by-pass valves
10. Inspect operation of cooling system block and tank heaters
11. Inspect air-cooled engine cooling systems
12. Inspect and test operation of blower motor, speed controls, and air temp
13. Inspect radiator for obstructions and clean exterior components
14. Inspect operation of semi-sealed and recovery systems
15. Inspect water pump for bearing condition and water leaks
16. Inspect thermostatic fan for condition of blades, hub, and mounts
17. Test operation of heater control valves for air and water with vac. gauge
18. Inspect auto transmission fluid coolers
    a. Inspect radiator for contamination with fluid
    b. Inspect transmission for contamination with coolant
19. Inspect warning light system
20. Reverse flush heater core

AREA OF COMPETENCY #6

PERFORM BRAKE SERVICE

IA. Inspect Drum/Disc Brake System
1. Check operation of brake system
2. Inspect drums/discs
3. Inspect linings or pads
4. Inspect brake hardware
   a. Springs
   b. Holddowns
   c. Adjusters
   d. Backing plate
   e. Anchors
   f. Parking brake
5. Inspect hydraulic system
   a. Wheel cylinders/calipers
   b. Master cylinder
   c. Lines/hoses
   d. Control valves
6. Inspect wheel bearings and seals
7. Inspect brake pedal rod, mounting, linkage, and free travel
8. Inspect operation of brake booster
9. Inspect operation of stoplight and brake warning light

AREA OF COMPETENCE #7

PERFORM ELECTRICAL SERVICE

IA. Inspect and Service Battery
1. Inspect battery electrolyte level and refill
2. Remove and clean battery terminals and cables
3. Test state of charge and determine battery condition
   a. Use hydrometer
   b. Use load type testers
4. Start vehicle using jumper cables
5. Charge battery
   a. Use fast charger w/thermometer and voltmeter
   b. Use slow charger
6. Inspect carrier and holddown

IIA. Remove and Replace Battery
1. Prepare and install battery
   a. Wet
   b. Dry
   c. Maintenance Free
2. R/R cables

IIIA. Diagnose Battery Problems
1. Diagnose electrical problems
2. Diagnose mechanical problems

IB. Inspect Charging Circuit
2. Inspect and adjust tension of belts with tension gauge

IIB. Remove and Replace Charging Circuit Components
5. R/R belts and pulleys

IC. Inspect Cranking System
1. Inspect cranking motor cables and connections

IIC. Remove and Replace Cranking Circuit Components
1. R/R battery cables

IE. Inspect Electrical Accessories
1. Inspect wiring and connections of all circuits
2. Inspect operation of windshield wipers and blade condition
4. Inspect operation of washers, clean and aim nozzles
5. Inspect operation of horn

AREA OF COMPETENCE #8

PERFORM ENGINE TUNE-UP SERVICE

IA. Perform Minor Tune-Up Service
5. Service air cleaner element and P.C. valve
6. Service battery and cables
7. Inspect fluid levels and belt condition
8. Inspect intake and exhaust pre-heat control mechanism

IIA. Perform Major Tune-Up Service
8. Service air cleaner, P.C. valve, and fuel filter
10. Inspect and tighten all hose connections
11. Check and adjust belts
12. Check fluid levels

AREA OF COMPETENCE #9

PERFORM FUEL AND EMISSION SYSTEM SERVICE

IA. Inspect Fuel and Emission Systems
- 1. Inspect fuel pump for mounting and leaks
- 2. Inspect emission system belts, hoses, and connections
- 4. Inspect fuel tank for leaks and dents
- 5. Inspect indicator gauge for operation
- 7. Inspect manifold heat control valve for operation
- 9. Inspect catalytic converter for condition/operation
- 10. Inspect positive crankcase ventilation system
- 12. Inspect heated air intake system

IIA. Remove and Replace Fuel and Emission Components
- 10. R/R and test P.C.V.

AREA OF COMPETENCE #10

PERFORM BODY ADJUSTMENTS AND SERVICE

IA. Inspect and Adjust Body Components
  1. Inspect and adjust doors
    a. Strikers and locks

IIA. Remove and Replace Body Components
  1. R/R door components
    a. Strikers and locks

AREA OF COMPETENCE #11

PERFORM EXHAUST AND LUBRICATION SERVICE

IA. Perform safety inspection
1. Inspect tires and air pressure
2. Inspect shocks
3. Inspect lines and hoses
4. Inspect fluid levels
5. Inspect lights and wipers
6. Inspect warning devices
7. Inspect suspension and steering
8. Inspect drive belts
9. Inspect brake pedal reserve
10. Inspect engine mounts
11. Inspect glass
12. Inspect exhaust manifold
13. Inspect muffler/resonator and pipes
14. Inspect catalytic converter
15. Inspect clutch pedal free travel

IIA. Perform Exhaust and Lubrication Service
1. Lubricate chassis
2. Change engine oil and filter
3. Change automatic transmission fluid and filter
4. Repack wheel bearings
5. Test anti-freeze protection
6. Flush and install anti-freeze
7. Clean windows
8. Vacuum interior
9. R/R exhaust manifold and pipe
10. R/R muffler, resonator, and pipes
11. R/R catalytic converter
12. R/R exhaust heat riser

AREA OF COMPETENCE #12

PERFORM RELATED SUBJECT ACTIVITIES

I. Demonstrate Prescribed (OHSA) Safe Work Practices in Each AREA OF COMPETENCE
   1. Demonstrate Shop Safety Practices
      a. Personal
      b. Co-Worker
      c. Fire
      d. Shop
      e. Equipment
      f. Tools
      g. OSHA
      h. Shop and personal appearance

II. Operate Welding Equipment
   1. Demonstrate gas procedures

III. Perform Shop Related Skills
   1. Identify and select fasteners
      a. Nuts, bolts, and screws
      b. Clips, retainers, and snap rings
      c. Washers
      d. Clamps and licking devices
   2. Maintain tools
      a. Drills, bits, and cutters
      b. Chisels and punches
      c. Screwdrivers
      d. Handles
   3. Demonstrate proper use of tools
      a. Stud extraction tools
      b. Torque wrenches
      c. Tap and die (thread chasers)
         (1) Thread repair
      d. Power hand tools
      e. Cutting tools
      f. Grinders
   4. Demonstrate use of shop manuals
      a. Repair manuals
      b. Parts and Time Guide
      c. Specifications
      d. Wiring diagrams
      e. Technical bulletins

IV. Solve Automotive Math and Related Measuring Problems
   1. Solve shop-business problems
   2. Solve metric problems
   3. Demonstrate precision tool measuring

V. Perform Communication Activities
   1. Write business letters
   2. Prepare resume
   3. Perform job application procedures
      a. Application forms
      b. Interview procedures
   4. Write work orders and service reports

VI. Maintain Bookkeeping Record for a Small Business
   1. Perform basic bookkeeping procedures

VII. Perform Management and Business Procedures
   1. Estimate jobs (local and state laws)
   2. Perform sales and service selling techniques
   3. Evaluate time management
   4. Determine employee productivity
   5. Perform inventory control and security

VIII. Solve Customer and Employer Relation Problems
   1. Solve communication problems
   2. Solve attitude problems of supervisor-employee relations

IX. Participate in Union Orientation

X. Participate in Supervised Work Experience Training (Co-op or Internship)

XI. Participate in Club Activities

III. REFERENCES

Action Handbook for Automotive Service Instruction. Motor Vehicle Manufacturer's Association of the United States, Inc., 1974, 320 Center Building, Detroit, Michigan 48202.

American National Standards for Training of Automotive Mechanics for Passenger Cars and Light Trucks. American National Standards Institute, 1972, ANSI D18.1-1972, 1430 Broadway, New York, New York 10018.

Automobile Mechanic Training Program Curriculum Outline. Ford Service Publications, 1973, Post Office Box 07150, Detroit, Michigan 48207.

Chilton's Labor Guide and Parts Manual. Chilton Company, 1974, Radnor, Pennsylvania 19089.

Directory of Occupational Titles, Vol. 1, 3rd Edition. United States Department of Labor, 1965, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Motor's Parts and Time Guide. 1974, New York, New York 10019.

National Automotive Data. Mitchell Manuals, 1974, Post Office Box 80427, San Diego, California 92138.

Program Planning Guide. McGraw-Hill, Inc., 1972, Manchester Road, Manchester, Missouri 63011.

IV. COMPETENCY RECORD

The COMPETENCY RECORD that appears in this section is suggested as a replacement for the traditional report card. It can be used to give employers, teachers, counselors, students and parents information about what each student can and cannot do.

The COMPETENCY RECORD should follow the student through his or her vocational training in the secondary and/or the post secondary school. The recommended grading scale is shown on the COMPETENCY RECORD. The COMPETENCY RECORD on the following pages includes **ALL** the AREAS OF COMPETENCE recommended for the graduate of the Automotive Mechanic occupational program. However, the occupational program for **LUBRICATION SPECIALIST** does not require that the student be competent in all AREAS OF COMPETENCE which are recommended for the automotive mechanic. The AREAS OF COMPETENCE which are recommended for a graduate of the Lubrication Specialist occupational program are summarized below. See the task list in the front of this booklet for more detailed information.

LUBRICATION SPECIALIST

TASK LIST

Tasks that should be performed by the Lubrication Specialist have been taken from the following areas of the task list developed for the Automotive Mechanic:

Competence Area #1
IA,IIA (2, 6, 7, 24, 25), IB (1, 3), IIB (1)

Competence Area #2
IA (1, 2, 4), IIA (5), IB (1), IC (1, 4), ID (1, 2, 3, 4, 5), IE (1, 2)

Competence Area #3
IA (1, 2)

Competence Area #4
IA

Competence Area #6
IA

Competence Area #7
IA, IIA, IIIA, IB (2), IIB (5), IC (1), IIC (1), IE (1, 2, 4, 5)

Competence Area #8
IA (5, 6, 7, 8), IIA (8, 10, 11, 12)

Competence Area #9
IA (1, 2, 4, 5, 7, 9, 10, 12), IIA (10)

Competence Area #10
IA (1a), IIA (1a)

Competence Area #11
IA, IIA

Competence Area #12
I, II (1), III, IV, V, VI, VII, VIII, IX, X, XI

COMPETENCY RECORD

Occupational Program : Lubrication Specialist
(Competencies of the Lubrication Specialist are shaded grey)

This competency record tells what the student, who is named below, has demonstrated that he or she can do. A committee of industrial representatives from throughout Minnesota assisted in identifying the competencies needed by graduates of the occupational programs shown above. For more specific information, refer to the task list for each occupational program.

Grading:
5 - able to help others; very competent
4 - able to perform the task(s) without supervision; competent
3 - able to perform the task(s) with limited supervision
2 - able to perform the task(s) with direct supervision
1 - unable to perform the task(s)
✔ - received introduction only

Name of Student _____

SCHOOL(S) ATTENDED DATES ATTENDED INSTRUCTOR'S NAME

_____

_____

_____

	Secondary Grade	Year	Teacher	Post Secondary Grade	Year	Teacher
AREA OF COMPETENCE #1: PERFORM STEERING AND SUSPENSION SERVICE						
IA. Inspect Steering and Suspension System						
IIA. Remove and Replace Steering and Suspension Components						
IIIA. Diagnose Steering and Suspension Systems						
IB. Inspect Manual and Power Steering Systems						
IIB. Remove and Replace Manual and Power Steering System Components						
IIIB. Rebuild Manual and Power Steering Components						
IVB. Diagnose Manual and Power Steering System						
Comments						

	Secondary Grade	Year	Teacher	Post Secondary Grade	Year	Teacher
AREA OF COMPETENCE #2: PERFORM DRIVE TRAIN SERVICE						
IA. Inspect Clutch Assembly						
IIA. Remove and Replace Clutch Components						
IIIA. Rebuild Clutch Components						
IVA. Diagnose Clutch Operation						
IB. Inspect Manual Transmission Assembly						
IIB. Remove and Replace Manual Transmission Components						
IIIB. Rebuild Manual Transmission						
IVB. Diagnose Manual Transmission Operation						
IC. Inspect Automatic Transmission Assembly						
IIC. Remove and Replace Automatic Transmission/ Components						
IIIC. Rebuild Automatic Transmissions						
IVC. Diagnose Automatic Transmission Operation						
ID. Inspect Drive Shaft Components						
IID. Remove and Replace Drive Shaft Components						
IIID. Diagnose Drive Shaft Operations						
IE. Inspect Drive Axle Assemblies						
IIE. Remove and Replace Drive Axle Components						
IIIE. Rebuild Drive Axle Components						
IVE. Diagnose Drive Axle Operation						
Comments						
AREA OF COMPETENCE #3: PERFORM ENGINE MECHANICAL SERVICE						
IA. Inspect Engine Condition						
IIA. Remove, Replace, and Inspect Engine Comp.						
IIIA. Rebuild, Measure, Assemble, and Adjust Engine Components						
IVA. Perform Final Inspection and Break-In Procedure						
Comments						

	Secondary Grade	Year	Teacher	Post Secondary Grade	Year	Teacher
COMPETENCE AREA #4: PERFORM COOLING AND HEATING SYSTEM SERVICE						
IA. Inspect Cooling and Heating System						
IIA. Remove and Replace Cooling and Heating System Components						
IIIA. Diagnose Cooling and Heating System						
Comments						
AREA OF COMPETENCE #5: SERVICE AIR CONDITIONING SYSTEM						
IA. Inspect Air Conditioning System						
IIA. Remove and Replace Air Conditioning Components						
IIIA. Rebuild Air Conditioning Components						
IVA. Diagnose Air Conditioning System						
Comments						
AREA OF COMPETENCE #6: PERFORM BRAKE SERVICE						
IA. Inspect Drum/Disc Brake System						
IIA. Remove and Replace Brake System Components						
IIIA. Rebuild and Machine Brake Components						
IVA. Diagnose Drum/Disc Brake System						
Comments						
AREA OF COMPETENCE #7: PERFORM ELECTRICAL SERVICE						
IA. Inspect and Service Battery						
IIA. Remove and Replace Battery						
IIIA. Diagnose Battery Problems						

	Secondary			Post Secondary		
	Grade	Year	Teacher	Grade	Year	Teacher
IB. Inspect Charging Circuit						
IIB. Remove and Replace Charging Circuit Components						
IIIB. Rebuild Charging Circuit Components						
IVB. Diagnose Generator/Alternator Charging Circuit						
IC. Inspect Cranking System						
IIC. Remove and Replace Cranking Circuit Components						
IIIC. Rebuild Cranking Circuit Components						
IVC. Diagnose Cranking Motor Circuit						
ID. Inspect Ignition System						
IID. Remove and Replace Ignition Circuit Components						
IIID. Rebuild Ignition Circuit Components						
IVD. Diagnose Ignition Circuit						
IE. Inspect Electrical Accessories						
IIE. Diagnose and Repair Electrical Accessory Circuits						
IF. Inspect and Replace Lighting System Components						
IIF. Diagnose and Repair Lighting Circuits						
Comments						
AREA OF COMPETENCE #8: PERFORM ENGINE TUNE-UP SERVICE+						
IA. Perform Minor Tune-Up Service						
IIA. Perform Major Tune-Up Service						
IIIA. Diagnose Engine Performance						
Comments						

	Secondary Grade Year Teacher		Post Secondary Grade Year Teacher	
AREA OF COMPETENCE #9: PERFORM FUEL AND EMISSION SYSTEM SERVICE				
IA. Inspect Fuel and Emission Systems				
IIA. Remove and Replace Fuel and Emission Components				
IIIA. Rebuild Fuel and Emission Components				
IVA. Diagnose Fuel and Emission Systems				
Comments				
AREA OF COMPETENCE #10: PERFORM BODY ADJUSTMENTS AND SERVICE				
IA. Inspect and Adjust Body Components				
IIA. Remove and Replace Body Components				
IIIA. Diagnose Body Problems				
Comments				
AREA OF COMPETENCE #11: PERFORM EXHAUST AND LUBRICATION SERVICE				
IA. Perform Safety Inspection				
IIA. Perform Exhaust and Lubrication Service				
IIIA. Diagnose Exhaust System				
Comments				
AREA OF COMPETENCE #12: PERFORM RELATED SUBJECT ACTIVITIES				
I. Demonstrate Prescribed (OSHA) Safe Work Practices in Each AREA OF COMPETENCE				
II. Operate Welding Equipment				

	Secondary Grade Year Teacher		Post Secondary Grade Year Teacher	
III. Perform Shop Related Skills				
IV. Solve Automotive Math and Related Measuring Problems				
V. Perform Communication Activities				
VI. Maintain Bookkeeping Record of a Small Business				
VII. Perform Management and Business Procedures				
VIII. Solve Customer and Employer Relation Problems				
IX. Participate in Union Orientation				
X. Participate in Supervised Work Experience Training				
XI. Participate in Club Activities (Co-op or Internship)				
OTHER				
Comments				

Statements of competencies can be checked at either the secondary or post-secondary level.

V. REPRESENTATIVES

The following Industry Representatives were involved in the development of the task list for this occupational program.

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Beutz Dodge
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VII. PROGRAMS IN THE STATE

MINNESOTA VOCATIONAL CENTERS

AUTO MECHANICS TRAINING IS OFFERED AT MOST SECONDARY AND POST-SECONDARY VOCATIONAL TECHNICAL INSTITUTES IN MINNESOTA. MANY COMPREHENSIVE HIGH SCHOOLS ALSO HAVE AUTO MECHANICS PROGRAMS.

PROGRAMS IN THE STATE

MINNESOTA AREA VOCATIONAL—TECHNICAL INSTITUTES

AUTO MECHANICS TRAINING IS OFFERED AT MOST SECONDARY AND POST-SECONDARY VOCATIONAL TECHNICAL INSTITUTES IN MINNESOTA. MANY COMPREHENSIVE HIGH SCHOOLS ALSO HAVE AUTO MECHANICS PROGRAMS.